

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A plain bearing comprising: a strong backing material substrate, the substrate having at least one of (i) a sliding layer of a polymer-based bearing material thereon, the polymer-based bearing material comprising a polymer-based matrix and being adhered directly to the substrate by adhesive properties of the polymer-based matrix material; and (ii) a layer of a metallic bearing material thereon, with the a sliding layer of the a polymer-based bearing material on the metallic bearing material, the polymer-based bearing material comprising a polymer-based matrix and being adhered directly to the metallic bearing material by adhesive properties of the polymer-based matrix material; the polymer-based matrix material selected from the group consisting of a modified epoxy resin and a polyimide/amide resin, the matrix resin having contained therein particles of a metal powder in the range from 15 to 30 vol% and particles of a fluoropolymer content lying in the range from approximately 2 to 8 vol%, and selectively including an addition selected from the group consisting of a ceramic powder in the range from 0.5 to 20 vol%, and, silica in the range from 2 to 15 vol%, wherein a total solids content of the polymer-based bearing material in the form of the particles of the metal powder, the particles of the fluoropolymer content, any ceramic powder, and any silica does not exceed 35 vol%, and wherein the polymer-based bearing material is adhered directly to at least one of the substrate and to the layer of the metallic bearing material by the adhesive properties of the matrix material.

2-36. (Canceled)

37. (Previously Presented) A plain bearing according to claim 1, wherein the modified epoxy resin consists of from 30 to 60w/w epoxy resin and 70 to 40w/w phenolic resin based on solid to solids content.

38. (Previously Presented) A plain bearing according to claim 1, wherein the modified epoxy resin also contains an amino resin.

39. (Previously Presented) A plain bearing according to claim 1, wherein the modified epoxy resin also contains vinyl resin.

40. (Previously Presented) A plain bearing according to claim 1, wherein the modified epoxy resin is prepared from an uncured epoxy resin matrix mixture, and the uncured epoxy resin matrix mixture contains two or more distinct epoxy resin constituents.

41. (Previously Presented) A plain bearing according to claim 1, wherein polyimide is a majority constituent in the polyimide/amide matrix resin.

42. (Previously Presented) A plain bearing according to claim 41, wherein the polyimide/amide resin also contains a vinyl resin constituent.

43. (Previously Presented) A plain bearing according to claim 1, wherein the metal powder is selected from the group consisting of tungsten, aluminum, copper, silver, tin, brass, bronze, stainless steel, and nickel.

44. (Previously Presented) A plain bearing according to claim 43, wherein the metal powder comprises a mixture of different metal powders.

45. (Previously Presented) A plain bearing according to claim 44, wherein the metal powder consists of a mixture of aluminum and tungsten metals, and the proportion of aluminum to tungsten is in the range between 30/70 and 70/30 Al/W volume%.

46. (Previously Presented) A plain bearing according to claim 45, wherein the proportion of Al to W is approximately 40/60% Al/W by volume.

47. (Previously Presented) A plain bearing according to claim 45, wherein the morphology of the W particles is nodular or rounded.

48. (Previously Presented) A plain bearing according to claim 45, wherein the Al powder is of flake or platelet morphology.
49. (Previously Presented) A plain bearing according to claim 1, wherein the metal powder comprises metal powder particles having a particle size in the range from 0.5 to 10 μ m.
50. (Previously Presented) A plain bearing according to claim 1, wherein the metal powder is selected from the group consisting of a mixture of aluminum and tin, a mixture of silver and copper, a mixture of copper and tungsten, and a mixture of silver and tungsten.
51. (Previously Presented) A plain bearing as claimed in claim 1, wherein the metal powder comprises metal alloy particles.
52. (Previously Presented) A plain bearing according to claim 51, wherein the metal alloy is selected from the group consisting of stainless steel, aluminum alloys, brass, and bronze.
53. (Previously Presented) A plain bearing according to claim 1, wherein the fluoropolymer is polytetrafluoroethylene.
54. (Canceled)
55. (Canceled)
56. (Previously Presented) A plain bearing according to claim 1, wherein the ceramic powder is selected from the group consisting of oxides, nitrides, carbides, silicates and sulfides.

57. (Currently Amended) A plain bearing according to claim 1, wherein ~~the addition selected from the group consisting of a ceramic powder and silica, further including~~ the ceramic powder content lying lies in the range from approximately 2 to 20 vol%.

58. (Currently Amended) A plain bearing according to claim 1, wherein ~~the addition selected from the group consisting of a ceramic powder and silica, further including~~ the silica content lying lies in the range from approximately 4 to 10 vol%.

59. (Previously Presented) A plain bearing according to claim 1, wherein the silica comprises particles having a particle size from 20 to 50 nanometers.

60. (Previously Presented) A plain bearing according to claim 1, wherein the silica comprises reactive silica particles, each reactive silica particle having a surface with which at least one "-OH" group is associated.

61. (Canceled)

62. (Previously Presented) A plain bearing according to claim 1, wherein the solids content added to the polymer-based matrix is from approximately 10 to 30 vol%.

63. (Previously Presented) A plain bearing according to claim 1, further including a silane material in the range of approximately 0.2 to 3 vol%.

64. (Previously Presented) A plain bearing according to claim 63, wherein the silane material is selected from the group consisting of: bis-(gamma-trimethoxysilylpropyl) amine and gamma-glycidoxypropyltrimethoxysilane.

65. (Canceled)

66. (Previously Presented) A plain bearing according to claim 1, wherein the layer of metallic bearing material is selected from a group consisting of an aluminum alloy and a copper alloy.

67. (Previously Presented) A plain bearing according to claim 1, wherein the polymer-based bearing material layer has a thickness of approximately 5 to 40 μ m.

68. (Previously Presented) A plain bearing according to claim 1, wherein the bearing material is deposited directly upon a strong backing material.

69. (Previously Presented) A plain bearing according to claim 68, wherein the bearing material has a thickness of from approximately 40 to 100 μ m.

70. (Previously Presented) A plain bearing according to claim 1, wherein the polymer-based bearing material is applied as a liquid to the substrate.

71. (Previously Presented) A plain bearing according to claim 70, wherein the liquid is sprayed.

72. (Currently Amended) A plain bearing comprising: a strong backing material substrate, the substrate having one of (i) a sliding layer of a polymer-based bearing material thereon, the polymer-based bearing material comprising a polymer-based matrix and being adhered directly to the substrate by adhesive properties of the polymer-based matrix material, the polymer-based matrix; and (ii) a layer of a metallic bearing material thereon with a sliding layer of a polymer-based bearing material on the metallic bearing material, the polymer-based bearing material comprising a polymer-based matrix and being adhered directly to the metallic bearing material by adhesive properties of the polymer-based matrix material; the polymer-based matrix material selected from the group consisting of a modified epoxy resin and a polyimide/amide resin, the matrix resin having contained therein particles of a metal powder in the range from 15 to 30 vol% and particles of a fluoropolymer content lying in the range from approximately 2 to 8 vol%, and selectively including an addition selected from the group consisting of a ceramic powder in the range from 0.5 to 20

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vol%, and, silica in the range from 2 to 15 vol%, ~~wherein the polymer based bearing material is adhered directly to at least one of a layer of a metallic bearing material and the plain bearing by the adhesive properties of the matrix material.~~

73. (Previously Presented) The plain bearing according to claim 72, wherein the layer of the metallic bearing material is positioned between the strong backing material substrate and the sliding layer of the polymer-based bearing material.

74. (Currently Amended) A plain bearing comprising: a strong backing material substrate, the substrate having a sliding layer of a polymer-based bearing material thereon and being adhered to the plain bearing by adhesive properties of the polymer-based matrix material, the polymer-based bearing material comprising a polymer-based matrix selected from the group consisting of a modified epoxy resin and a polyimide/amide resin, the matrix resin having contained therein particles of a metal powder in the range from 15 to 30 vol% and particles of a fluoropolymer content lying in the range from approximately 1 to 15 vol%, and selectively including an addition selected from the group consisting of a ceramic powder in the range from 0.5 to 20 vol%, and, silica in the range from 2 to 15 vol%, wherein the polymer-based bearing material includes a total content of solids addition not to exceed 35 vol% in the form of the particles of the metal powder, the particles of the fluoropolymer content, any ceramic powder, and any silica, and wherein the polymer based bearing material is adhered to the plain bearing by the adhesive properties of the matrix material.

75. (Previously Presented) The plain bearing according to claim 74, wherein a layer of a metallic bearing material is adhered between the strong backing material substrate and the sliding layer of the polymer-based bearing material.